

DIRECTORATE OF SCHOOL EDUCATION, GOVERNMENT OF TAMILNADU, CHENNAI - 600 006.
BOTANY SYLLABUS

STANDARD XII

Unit - I Taxonomy of Angiosperms

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>1.1 to 1.3.</p> <p>Analyses the Systems of Classification of plants</p> <p>Recalls uses of Herbaria develops skill in preparing Herbarium Sheets in a Scientific manner.</p> <p>Recalls Economic importance of plants from the prescribed families.</p> <p>Recalls Characteristic features of Taxonomic families prescribed for study.</p>	<p>Unit I: Taxonomy of Angiosperms</p> <p>1.1. Types of Classifications: Artificial, Natural, Phylogenetic</p> <p>a) Biosystematics</p> <p>b) Binomial Nomenclature</p> <p>c) Herbaria and their uses</p> <p>1.2. Bentham & Hooker's Classification of Plants</p> <p>1.3. Families : Malvaceae, Fabaceae, Rubiaceae, Asteraceae, Solanaceae, Euphorbiaceae, Liliaceae, Arecaceae and their Economic Importance</p>	<p>Discusses the classification of plants</p> <p>Discusses the salient features of Bentham and Hooker's Classification of Plants</p> <p>Describes the Taxomic features of selected Families using Specimens collected from the field.</p>	<p>Charts and Sketches and B.B.</p> <p>Actual Specimens from the prescribed families.</p>	<p>Describe the classification of plants according to Bentham & Hooker</p> <p>Describe the characteristic features of the Families at 1.3.</p>	<p>20 periods</p>

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Unit - II Plant Anatomy (10 periods)

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>2.1 to 2.5.</p> <p>Recalls the anatomy of Dicot and monocot plants - Stem, Root, Leaf</p> <p>Draws Sketches of T.S. of the above from Microslides.</p>	<p>Unit II: <u>PLANT ANATOMY</u></p> <p>2.1. Tissues and Tissue Systems</p> <p>2.2. Anatomy of Dicot and Monocot Roots</p> <p>2.3. Anatomy of Dicot and Monocot Stems</p> <p>2.4. Anatomy of Dicot and Monocot Leaves</p> <p>2.5. Secondary growth in Dicot Stem</p>	<p>Discusses the anatomical features of monocots and dicots - Stem, Root and Leaf using charts and B.B. Sketches.</p>	<p>Appropriate Charts</p> <p>B.B. Sketches</p>	<p>Describe the anatomy of the Monocots and Dicots with reference to Stem, Root and Leaf</p>	<p>15 periods</p>

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Unit - III Cell Biology and Genetics (25 periods)

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>3.1 to 3.9.</p> <p>Recognises the chromosomes :</p> <p>Analyses the genetical concepts prescribed for study (3.2 to 3.9)</p> <p>Analyses DNA and RNA with ref. to structure and functions</p>	<p>Unit III: <u>CELL BIOLOGY AND GENETICS</u></p> <p>3.1. Chromosomes : Structure and types</p> <p>3.2. Genes and Genome</p> <p>3.3. Linkage and Crossing over</p> <p>3.4. Recombination of Chromosomes</p> <p>3.5. Mutation</p> <p>3.6. Chromosomal aberrations</p> <p>3.7. DNA as Genetic material</p> <p style="padding-left: 20px;">Structure of DNA and its Replication</p> <p>3.8. Structure and types of RNA, Role of RNA in Protein Synthesis</p> <p>3.9. Genetic Code, Transcription, Translation</p>	<p>Discusses the genetical concepts prescribed for study with the help of Charts and B.B. Sketches</p>	<p>Charts and B.B. Sketches</p>	<p>Explain the Gene concept</p> <p>Explain the structure and replication of DNA Molecule</p> <p>Explain the Role of RNAs in Protein Synthesis</p>	25 periods

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STANDARD XII

Unit - IV Bio-Technology (30 periods)

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>Analyses the innovations done in the field of Biotechnology</p> <p>Applies the Biotechnological innovations for Human development</p>	<p>Unit IV :</p> <p><u>BIO-TECHNOLOGY</u></p> <p>4.1. Recombinant DNA Technology</p> <p>4.2. Transgeneric plants and Microbes</p> <p>4.3. Plant Tissue Culture and Applications</p> <p>4.4. Protoplast Fusion</p> <p>4.5. Single Cell Protein (SCP)</p>	<p>Discusses the innovations in Biotechnology and their applications for Human development</p>	<p>Charts and pictures</p>	<p>Describe the innovations done in the field of Biotechnology and their applications</p>	<p>30 periods</p>

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Unit - V Plant Physiology (30 periods)

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>5.2. Analyses the various aspects of the Biochemical Process of Photosynthesis</p> <p>5.2. (i) Analyses different modes of Heterotrophic Nutrition</p> <p>5.3. Analysis the various aspects of the Biochemical process of Respiration</p> <p>5.4. Analyses the effect of auxins and other growth regulating substances on plants - experiments</p> <p>4. Recalls Photoperiodism and Vernalisation</p>	<p>Unit V : PLANT PHYSIOLOGY</p> <p>5.1. Enzymes : Classification, Properties, Mechanism and Action</p> <p>5.2. Photosynthesis</p> <p>a) Significance</p> <p>b) Site of Photosynthesis,</p> <p>c) Photochemical and Biosynthetic phases</p> <p>d) Electron Transport System</p> <p>e) Photophosphorylation (cyclic and non-cyclic)</p> <p>f) C3 and C4 pathways</p> <p>g) Photorespiration</p> <p>h) Factors affecting Photosynthesis</p> <p>i) Mode of Nutrition</p> <p>Autotrophic</p> <p>Heterotrophic (Saprophytic, Parasitic & Insectivorous plants)</p> <p>j) Chemosynthesis</p> <p>5.3. Respiration</p> <p>a) Mechanism</p> <p>b) Glycolysis</p> <p>c) Krebs Cycle</p> <p>d) Pentose Pathway</p> <p>e) Anaerobic Respiration</p> <p>f) Respiratory Quotient</p> <p>g) Compensation Point</p> <p>h) Fermentation</p> <p>5.4. Plant Growth</p> <p>a) Growth Regulators</p> <p>b) Photohormones</p> <p>c) Auxins</p> <p>d) Gibberellins</p> <p>e) Cytokinins</p> <p>f) Ethylene</p> <p>g) ABA</p> <p>5.5. Photoperiodism & Vernalisation</p>	<p>Discusses the Physiology of Photosynthesis from a Biochemical perspective</p> <p>Explains modes of Heterotrophic Nutrition</p> <p>Discusses the Physiology of Cellular Respiration</p> <p>Discusses the role of Auxins and other growth regulators on Plant Growth</p> <p>Present experimental data on Photoperiodism and Vernalisation for discussion</p>	<p>1. Charts and B.B. Sketches</p>	<p>Explain the Mechanism of Photosynthesis</p> <p>Explain the Mechanism of Cellular Respiration</p> <p>Explain the role of Auxins Gibberellins and other substances on plant growth</p>	30 periods

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STANDARD XII	Unit - VI Biology in Human Welfare (Restricted to Plants) (20 periods)				
Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
<p>1. Analyses various measures undertaken on by Scientists with reference to application of Botany for Human Welfare</p> <p>2. Recognizes various economic importance of diversity of plants</p>	<p>Unit VI <u>Biology in Human Welfare (Restricted to Plants)</u></p> <p>6.1. Food Production Breeding Experiments Improved Varieties Role of Bio-Fertilizers</p> <p>6.2. Crop diseases and their control, Biopesticides</p> <p>6.3. Genetically Modified Food</p> <p>6.4. Bio-War</p> <p>6.5. Bio-Piracy</p> <p>6.6. Bio-Patent</p> <p>6.7. Sustained Agriculture</p> <p>6.8. Medicinal Plants including Microbes</p> <p>6.9. Economic Importance</p> <p>a) Food Yielding (Rice)</p> <p>b) Oil Yielding (Groundnut)</p> <p>c) Timber Yielding (Teak)</p>	<p>Explains various measures undertaken for Human Welfare through Biological Research</p> <p>Explains the Economic Importance of plants in the areas mentioned in the syllabus</p>		<p>1. Explain the Application of Biology Research for Human Welfare</p> <p>2. Explain the Economic Importance of plants for Human society</p>	<p>20 periods</p> <p style="text-align: right;">Total : 170 Periods</p>